UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,090	11/14/2003	Peter J. Nicklas	22176.25	9534

29127 7590 12/14/2009

HOUSTON ELISEEVA
4 MILITIA DRIVE, SUITE 4
LEXINGTON, MA 02421

EXAMINER	
ELVE, MARIA ALEXANDRA	
ART UNIT	PAPER NUMBER
3742	

MAIL DATE	DELIVERY MODE
12/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PETER J. NICKLAS

Appeal 2009-005586
Application 10/714,090
Technology Center 3700

Decided: December 14, 2009

Before RICHARD E. SCHAFER, JAMESON LEE, and MICHAEL P. TIERNEY, *Administrative Patent Judges*.

TIERNEY, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is a decision on appeal by the real party in interest, Hobart Brothers Co. (Hobart) under 35 U.S.C. § 134(a) from a final rejection of claims 10-12, the only claims on appeal. Claim 13 was cancelled prior to this appeal. Claims 1-9 and 14-20 were withdrawn from consideration as the result of a requirement under 37 CFR § 1.142(a) prior to this appeal. Hobart requests reversal of the Examiner's rejections of claims 10-12. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

References Relied on by the Examiner

Arikawa et al. (Arikawa)	3,531,620	Sep. 29, 1970
Nemoto et al. (Nemoto)	3,855,015	Dec. 17, 1974
Ogawa et al. (Ogawa)	5,861,605	Jan. 19, 1999

The Invention

Hobart's invention is directed to a tubular weld wire comprising: a steel sheath encapsulating a core that is formulated for submerged arc welding. (Spec. ¶ 15; App. Br. 11, Claims App'x.) Claim 10, the only independent claim, is illustrative of the claimed invention and is reproduced below:

> 10. A tubular weld wire comprising: a steel sheath encapsulating a core; the core formulated for submerged arc welding and comprising one or more non-metallic compounds selected from the group of non-metallic compounds consisting of $A1_2O_3$, Na_2O_3, $MgCO_3$, MgA1, CaF_2, $CaCO_3$, MgO and combinations thereof, wherein the total percentage of one or more nonmetallic compounds in the core composition ranges from about 1% Wt to about 30% Wt and wherein the non-metallic compounds are $A1_2O_3$ and Na_2O_3 with the total percentage of 14% Wt.

(App. Br. 11, Claims App'x.)

The Rejections on Appeal

The Examiner provided the following grounds of rejection for the claims on appeal:

1. The Examiner rejected claims 10 and 12 under 35 U.S.C. § 103(a) as unpatentable over Ogawa and Nemoto.
2. The Examiner rejected claims 11 under 35 U.S.C. § 103(a) as unpatentable over Ogawa, Nemoto, and Arikawa.

Claims 11 and 12[1] depend directly from claim 10. The claims all stand or fall on whether the combination of Ogawa and Nemoto taught one of ordinary skill in the art to utilize a core with the non-metallic compound composition required by claim 10.

B. ISSUE

Has Hobart shown that the combination of Ogawa and Nemoto would not have taught one of ordinary skill in the art to utilize a tubular weld wire core having $A1_2O_3$ and Na_2O_3 present in an amount of 14 wt% and no other "non-metallic" compounds?

[1] Claim 10 states "wherein the non-metallic compounds are $A1_2O_3$ and Na_2O_3 with the total percentage of 14% Wt." We note that while Claim 12 depends from claim 10, claim 12 allows the total percentage of non-metallics to range from between 5 and 15 Wt%.

C. FINDINGS OF FACT

Hobart's Tubular Welding Wire

1. Hobart teaches that "non-metallic" compounds useful in its wire/flux combination are $A1_2O_3$, Na_2O_3, $MgCO_3$, MgA1, CaF_2, $CaCO_3$, and MgO. (Spec., ¶ 16)

2. Hobart teaches that its best performing wire/flux has a core containing 14 wt% of a nonmetallic composition consisting of $A1_2O_3$, Na_2O_3, where the $A1_2O_3$ and Na_2O_3 are the *only* "non-metallic" compounds in the core. (*Id.* at ¶ 16 and Table 1).

Ogawa

3. Ogawa discloses a tubular weld wire for arc welding comprising a stainless steel sheath surrounding a core comprising non-metallic compounds. (Ogawa 1:6-11, 2:13-25)

4. Ogawa teaches that it is desirable for the weld wire to have a flux core that comprises 0.5 to 1.5 % wt. $A1_2O_3$. (*Id.* at 2:13-25, 3:64 to 4:6)

5. Ogawa teaches that a composition comprising greater than 1.5 % wt. of $A1_2O_3$ causes negative effects on weld quality by degrading weld bead shape. (*Id.* at 4:1-6)

6. Ogawa provides examples of weld wires having Na_2O_3 in amounts ranging from 0.09 to 0.15 % wt. but does not elaborate on why Na_2O_3 is present in the wire. (*Id.* at Tables 7-8)

7. Ogawa states its weight percentages in terms of the total weight of the wire (core and sheath) whereas the claims recite the weight percentage in terms of the core. (*Id.*)

8. For purposes of clarity Ogawa's weight percentages will hereinafter

be recited in terms of the weight percentage of the core.

9. Ogawa teaches a flux ratio of approximately 25%, meaning that the weight of the sheath is 75% of the total weight and the core is 25%. (*See*, Table 7).

10. One of ordinary skill in the art would understand that Ogawa teaches using approximately 2 to 6 % wt. $A1_2O_3$, when calculated using the claimed core weight percent, i.e., 0.5% to 1.5% of the total weight of the entire wire, as the sheath is 75% of the weight and the core is 25%. (See Table 7).

11. One of ordinary skill in the art would understand that the upper limit of Ogawa's Al_2O_3 is approximately 6% when calculated using the claimed core weight percent, i.e., 1.5% of the total weight of the entire wire, as the sheath is 75% of the weight and the core is 25%. (See Table 7).

12. One of ordinary skill in the art would understand that Ogawa teaches providing Na_2O_3 in amounts ranging from approximately 0.4 to 1% wt. of the core, i.e. 0.09% to 0.15% of the total weight of the entire wire, as the sheath is 75% of the weight and the core is 25%. (See Table 7).

13. Similarly, calculating the terms of $A1_2O_3$ and Na_2O_3 in terms of weight percentage of the core reveals that Ogawa teaches a maximum combined composition of $A1_2O_3$ and Na_2O_3 of approximately 7% by weight of the core, i.e. 1.65% of the total weight of the entire wire as the sheath is 75% of the weight and the core is 25%.

Nemoto

14. Nemoto is directed to a work roll for hot rolling where the work roll has a weld metal that may have a flux on its surface. (Nemoto, Abstract and 6:50-63)

15. Nemoto provides a brief description of a specific type of flux that may be used with its weld metal. In particular, Nemoto's particular description of a suitable flux is directed to a single composition having specific ingredients in specific amounts. (*Id.* at 11:24-29)[2]

16. Nemoto's specifically identified flux contains, among other compounds, Al_2O_3, Na_2O_3, $CaCO_3$ and CaF_2 where Al_2O_3 and Na_2O_3 are present in an amount of 15.2% by weight. (Nemoto 11:24-29)

D. PRINCIPLES OF LAW

During examination, claim terms are given their broadest reasonable interpretation consistent with the specification. *In re Morris*, 127 F.3d 1048, 1055 (Fed. Cir. 1997).

Proving obviousness under 35 U.S.C. § 103 requires that one identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

E. ANALYSIS

The Examiner rejected Hobart claims 10 and 12 as obvious over Ogawa in view of Nemoto. The Examiner reasoned that while Ogawa did not teach Al_2O_3 and Na_2O_3 in a combined amount of 14 wt%, such an amount would have been obvious in view of Nemoto's teaching that Al_2O_3 and Na_2O_3 are useful in a combined amount of 15.2 wt%. (Ans. 3) The

---

[2] Nemoto also mentions the use of a mixture of two fluxes but the two fluxes are identified only as a bonded flux for hard-facing available from Kawasaki Iron Making Co. and a bond flux for high tensile strength steel from Kobe Steel Works. (Nemoto 8:66 to 9:3)

Examiner further rejected Hobart claim 11 as obvious over Ogawa and Nemoto and further in view of Arikawa as Arikawa is said to teach the presence of Fe, FeMg and FeSi, which are required by claim 11. (*Id.* at 4) The Examiner and Hobart dispute whether the combination of Ogawa and Nemoto teaches a tubular weld wire having a core comprising the recited composition of non-metallic compounds. (Ans. 3-4, App. Br. 3-7)

Claim Construction

Hobart's sole independent claim, claim 10, is directed to a weld wire having a core comprising certain non-metallic compounds. The non-metallic compounds are identified in claim 10 as limited to $A1_2O_3$, Na_2O_3, $MgCO_3$, MgA1, CaF_2, $CaCO_3$, and MgO. Hobart claim 10 however, further limits the non-metallic compounds present to $A1_2O_3$ and Na_2O_3 by stating "*wherein the non-metallic compounds are* $A1_2O_3$ and Na_2O_3 with the total percentage of 14% Wt." (App. Br. 11, Claims App'x, emphasis added.)

We give claim terms their broadest reasonable interpretation so long as the interpretation is consistent with the specification. *Morris*, 127 F.3d at 1055. Hobart's independent claim names seven non-metallic compounds but goes on to state wherein the nonmetallic compounds in the core of the wire are $A1_2O_3$ and Na_2O_3. (App. Br. 11, Claims App'x.) This recitation that the non-metallic compounds are only $A1_2O_3$ and Na_2O_3 is consistent with Hobart's specification, which teaches that weld wire having *only* $A1_2O_3$ and Na_2O_3 as the non-metallic compounds provided the best performance. (Spec. ¶ 16 and Table 1) As such, based on the plain language of the claim taken in light of the specification, we hold that that the claim limits the non-metallic compounds to only $A1_2O_3$ and Na_2O_3 to the exclusion of the other

five non-metallic compounds ($MgCO_3$, MgA1, CaF_2, $CaCO_3$, MgO).[3]

Ogawa and Nemoto Fail to Teach the Claimed Invention

Ogawa teaches that it is desirable to provide a weld wire having a flux core that comprises 2 to 6 % wt. $A1_2O_3$. (Ogawa 2:13-25, 3:64 to 4:6) Ogawa further teaches that using a core composition comprising greater than 6 % wt. of $A1_2O_3$ causes negative effects on weld quality by degrading weld bead shape. (*Id.* at 4:1-6)

Ogawa Tables 7-8, provide a variety of examples of flux compositions comprising both $A1_2O_3$ and Na_2O_3. (*Id.* at Tables 7-8) Specifically, Tables 7-8 teach providing Na_2O_3 in amounts ranging from approximately 0.4 to 1% wt. (*Id.*) From these tables, one of ordinary skill in the art would understand that Ogawa teaches an upper limit of 7 % wt. on the combined amount of $A1_2O_3$ and Na_2O_3 (i.e. 6% +1%). Accordingly, Ogawa does not teach a core composition wherein "the non-metallic compounds are Na_2O_3 and $A1_2O_3$ with the total percentage of 14% wt."

Nemoto teaches a welding flux. Nemoto however, provides a very limited disclosure of the flux composition that may be used in its welding flux. Specifically, Nemoto describes only a single flux composition that is akin to a data point in that it does not vary in components, nor does it provide a range of amounts.[4] (Nemoto 11:24-29) Nemoto's single flux

[3] To the extent Hobart desired non-metallics other than $A1_2O_3$ and Na_2O_3 the burden was on Hobart to clearly set forth the bounds of its claims.

[4] Nemoto's flux composition is "a 4:1 mixture of a flux composed of 16 wt% of SiO_2, 16 wt% of $A1_2O_3$, 21 wt% of CaO, 31 wt% of MnO, 7 wt% of CaF_2, 4 wt% of Fe_2O_3 and 3 wt% of Na_2O_3 and a flux composed of 20 wt%

composition comprises both $CaCO_3$ and CaF_2 in addition to 15.2 wt. % Al_2O_3 and Na_2O_3. (Nemoto 11:24-29, App. Br. 7) As such, Nemoto fails to teach using 15.2 wt. % Al_2O_3 and Na_2O_3 in the absence of any of the excluded non-metallic compounds ($MgCO_3$, MgA1, CaF_2, $CaCO_3$, MgO).

The combined teachings of Ogawa and Nemoto would not have led one of ordinary skill in the art to the claimed invention. Specifically, Ogawa teaches a maximum of 7 wt% Al_2O_3 and Na_2O_3. Ogawa informs one of ordinary skill in the art that higher levels of Al_2O_3 in a wire flux core are detrimental to weld quality and Ogawa does not provide a reason to employ more than 1 wt. % Na_2O_3. Nemoto teaches the use of a particular amount (15.2%) of Al_2O_3 and Na_2O_3, but does not teach using the amount claimed in the absence of either $CaCO_3$ and CaF_2 (which are excluded by the claim). Accordingly, the cited references would not have lead one of ordinary skill in the art to exceed Ogawa's upper limit (7%) on the amounts of Al_2O_3 and Na_2O_3 in the wire core, where the only nonmetallics are Al_2O_3 and Na_2O_3. Based on the foregoing we reverse the Examiner's rejections of claims 10 and 12 because it has not been established on this record that one of ordinary skill in the art would have been guided to a wire core where the only nonmetallics are Al_2O_3 and Na_2O_3 and present in an amount of 14% by weight of the core.

Claim 11 depends from claim 10. The Examiner relied on Arikawa in addition to Ogawa and Nemoto to reject claim 11. Arikawa does not remedy the deficiencies of Ogawa and Nemoto as it does not, alone or in combination with Ogawa and Nemoto, provide a reason to utilize a wire core

---

of $CaCO_3$, 40 wt% of CaF_2, 15 wt% of Mn and 25 wt% of Fe-Ti." (Nemoto 11:24-29)

where the nonmetallics are Al_2O_3 and Na_2O_3 present in an amount of 14% by weight of the core. Accordingly, we reverse the Examiner's rejection of claim 11.

F. CONCLUSION

Hobart has shown that the combined teachings of Ogawa and Nemoto would not have suggested to one of ordinary skill in the art to utilize a tubular weld wire core having $A1_2O_3$ and Na_2O_3 present in an amount of 14 wt% and no other "non-metallic" compounds.

G. ORDER

The rejections of claims 10 and 12 under 35 U.S.C. § 103(a) as unpatentable over Ogawa and Nemoto are reversed.

The rejection of claim 11 under 35 U.S.C. § 103(a) as unpatentable over Ogawa, Nemoto, and Arikawa is reversed.

REVERSED

ak

Houston Eliseeva
4 Militia Drive, Suite 4
Lexington, MA 02421